

Remarks

The Office Action mailed July 3, 2003, has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-21 are now pending in this application. Claims 1-20 stand rejected. Claim 21 is newly added.

A fee calculation sheet for the newly added claim along with authorization to charge a deposit account in the amount of the calculated fee are submitted herewith.

The rejection of Claims 1-4, 7, 9, 10, 12, and 15-20 under 35 U.S.C. § 102(b) as being anticipated by Conrad (U.S. Patent No. 1,466,423) is respectfully traversed.

Claim 1 recites a fuse body for receiving a fuse element assembly, the fuse element assembly having opposite ends and a length therebetween, and the fuse element assembly including a fuse element extending substantially the entire length between the opposite ends, said fuse body comprising a first end, a second end spaced from the first end by a distance substantially equal to the length of the fuse element assembly, and a bore extending through said body between said first end and said second end, said bore comprising a clearing portion having a first cross sectional area and a positioning portion having a second cross sectional area, said first cross sectional area larger than said second cross sectional area to prevent the fuse element from contacting an interior surface of the clearing portion.

Conrad does not describe the fuse body recited in Claim 1. More specifically, Claim 1 recites a fuse body for receiving a fuse element assembly having opposite ends and a length therebetween, and a fuse element extending substantially the entire length between the opposite ends. It is respectfully submitted that Conrad does not describe a fuse element extending substantially an entire length of a fuse element assembly between opposite ends of the fuse element assembly. Rather, Conrad describes a series of elements connected to one another in a

fuse (38), none of which extend the length of the assembly. Specifically, Conrad describes a socket (2) and an insertable plug (4) with an attached fuse (38). The fuse (38) includes a tube (41), an upper ferrule (37) and a lower ferrule (42). A stranded conductor (43) connected to the upper ferrule (37) extends partially through the tube and is soldered to a stem (47). A terminal member (48) is threaded into the stem (47) and is coupled to a fuse wire (51) extending within a cork (49), and also to a tensile wire (52), in another portion of the tube (41). A conducting wire (53) is linked to the fuse wire (51) and the tensile wire (52), and the conductive wire (52) extends the remainder of the tube (41), through a hole in the lower end cap (54) and is attached thereto by a screw (55). See Conrad Figure 3. None of the elements of the fuse (38) are fairly characterized as a fuse element extending the length of the assembly.

Additionally, Claim 1 further recites that the body comprises a first end, and a second end spaced from the first end by a distance substantially equal to the length of the fuse element assembly. The sleeve (11) of the socket member (2), which the Office Action equates with the recited fuse body, does not include first and second ends spaced by a distance equal to the length of the fuse element assembly. Rather, it is clear from Figure 4 of Conrad that the ends of the sleeve (11) extend well beyond the length of the fuse (38).

Still further, Claim 1 recites that the body includes a bore extending through the body between the first end and the second end, the bore comprising a clearing portion having a first cross sectional area and a positioning portion having a second cross sectional area, the first cross sectional area larger than the second cross sectional area to prevent the fuse element from contacting an interior surface of the clearing portion. The fuse tube (41) of Conrad is a substantially constant diameter tube and does not meet the recitations of Claim 1 that the body has first and second cross sectional areas of different size. Moreover, the fuse wire (51) of Conrad is surrounded by the cork (49) within the tube, thereby physically preventing the fuse wire (51) from contacting the tube (41). The sleeves (13), (14) of the plug member (4) of Conrad may center the fuse within the sleeve (11), but not for the purpose of preventing a fuse element from contacting the sleeves (11), (13), (14). The construction of the fuse (38) renders it

impossible for a fuse element to contact the sleeves (11), (13) and (14). Further, Applicants note that the sleeves (11), (13), and (14) themselves have a constant diameter, and only by including separately provided tapered contact rings (16), (17) does a passageway through the sleeve change cross sectional shape. That is, while the cross sectional area of the rings (16) and (17) changes along the length of the rings, the cross sectional area of the bore in the sleeve (11) remains constant.

For at least the reasons set forth above, Claim 1 is submitted to be patentable over Conrad.

Claims 2-4 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2-4 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-4 likewise are patentable over Conrad.

Claim 7 recites a fuse body for a fuse element assembly having an outer dimension, said fuse body comprising "a first end surface configured to have a conductive end cap secured thereto," "a second end surface configured to have a conductive end cap secured thereto" and "a longitudinal bore extending through said fuse body from said first end surface to said second end surface, said bore comprising a positioning portion and a clearing portion, said positioning portion receiving the outer dimension of the fuse element assembly and maintaining the fuse element in a substantially centered position within said clearing portion, thereby preventing the fuse element assembly from contacting an interior surface of the bore when the fuse element assembly is mounted within said bore."

Conrad does not describe a fuse body having a bore, and end surfaces that are configured to have conductive end caps secured thereto. At least the upper portion of the fuse tube (41) described by Conrad is engaged to an externally threaded stud (36). The stud (36) engages an interior surface of the tube and not an end surface as recited in Claim 7.

In addition, Conrad does not describe a body having a bore therein, a portion of which is dimensioned to receive the outer dimension of the fuse element and maintain the fuse element in a substantially centered position as recited in Claim 7. Rather, the sleeve (11) of the socket member (2) of Conrad is a substantially constant diameter sleeve which is fitted with separately provided contact terminals having short sleeves (13, 14) connected to tapered ring terminals (16, 17). That is, while the cross sectional area of the rings (16) and (17) changes along the length of the rings extending in the sleeve (11), the cross sectional area of the bore in the sleeve (11) remains constant.

Furthermore, Conrad does not describe a fuse body including a positioning portion dimensioned to receive a outer dimension of a fuse element and maintain the fuse element in a substantially centered position. The tube (41) is a constant diameter tube having no structure to center the fuse element, and the provision of the cork (49) which serves to center the fuse wire (41) within the tube renders a centering structure of the tube unnecessary.

For the reasons set forth above, Claim 7 is submitted to be patentable over Conrad.

Claims 9 and 10 depend, directly or indirectly, from independent Claim 7. When the recitations of Claims 9 and 10 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claims 9 and 10 likewise are patentable over Conrad.

Independent Claim 12 recites a fuse comprising "a fuse body comprising a first end, a second end and a bore extending therethrough, said bore comprising a clearing portion having a first cross sectional area and a positioning portion having a second cross sectional area, said first cross sectional area different than said second cross sectional area," "a fuse element assembly within said bore and extending substantially from said first end to said second end of said bore, said fuse element assembly comprising an outer dimension substantially coextensive with said second cross sectional area, a portion of said fuse element assembly substantially centered within said first cross sectional area, thereby ensuring a clearance between a fuse element and an interior surface of said fuse body within said clearing portion," "a first end cap secured to said

first end of said fuse body and electrically connected to said fuse element assembly" and "a second end cap secured to said second end of said fuse body and electrically connected to said fuse element assembly."

As noted above, Conrad does not describe a fuse body including a bore having a clearing portion having a first cross sectional area and a positioning portion having a second cross sectional area, said first cross sectional area different than said second cross sectional area. As noted above, the fuse tube (41), and each of the sleeves (11), (13) and (14) have a uniform diameter and cross section. Only by adding a separately provided contact rings (16) and (17) to the sleeve (11) does the passage through the sleeve (11) change.

Further, Conrad does not describe a fuse element that has an outer dimension substantially coextensive with a second cross sectional area of a bore in a fuse body. Rather, Conrad describes a socket member having a sleeve (11) that is fitted with conducting rings (16 and 17) and short sleeves (13 and 14) that engage the plug member (4). In addition, the cross sectional area of the bore of the sleeve (11) does not ensure a clearance between the fuse element assembly and an interior surface of the fuse body. The construction of the fuse wire (51) surrounded by the cork (49) in the fuse tube (41) as described by Conrad already assures this.

Still further, Conrad does not describe a first end cap secured to the first end of the fuse body and electrically connected to the fuse element assembly and a second end cap secured to the second end of the fuse body and electrically connected to the fuse element assembly as recited in Claim 12. At least the upper portion of the fuse tube (41) described by Conrad is engaged to an externally threaded stud (36) which may be coupled to the plug (4) at the upper end. The upper end of the fuse tube (41) does not include an end cap.

For at least the reasons set forth above, Claim 12 is submitted to be patentable over Conrad.

Claims 15-20 depend from independent Claim 12. When the recitations of Claims 15 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 15-20 likewise are patentable over Conrad.

In view of the numerous differences between the structure recited in the instant claims and the structure of the device described by Conrad, as noted above, it is respectfully submitted that Conrad is not suggestive of the recitations of the recitations of Claims 1-4, 7, 9, 10, 12, and 15-20.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-4, 7, 9, 10, 12, and 15-20 be withdrawn.

The rejection of Claims 6, 8 and 13 under 35 U.S.C. § 103 as being unpatentable over Conrad is respectfully traversed.

For the reasons set forth above, it is respectfully submitted that the respective base Claims (Claims 1, 7 and 12) of Claims 6, 8 and 13 are patentable over Conrad. When the recitations of Claims 6, 8, and 13 are considered in combination with the recitations of the base claims, it is respectfully submitted that Claims 6, 8 and 13 are likewise patentable over Conrad.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 6, 8 and 13 be withdrawn.

The rejection of Claims 5, 11 and 14 under 35 U.S.C. § 103 as being unpatentable over Conrad in view of Reese et al. (U.S. Patent No. 5,214,406) is respectfully traversed.

Claims 5, 11, and 14 depend from Claims 1, 7, and 12, respectively which are submitted to be patentable over Conrad for the reasons set forth above. It is submitted that Reese et al. adds nothing to the Conrad reference with respect to Claims 1, 7 and 12, and that Claim 1, 7, and 12 are patentable over the combination of Conrad in view of Reese et al. When the recitations of Claims 5, 11, and 14 are considered in combination with the recitations of Claims 1, 7 and 12,

Claims 5, 11, and 14 are likewise submitted to be patentable over the combination of Conrad in view of Reese et al.


Additionally, it is still respectfully submitted that a prima facie case of obviousness has not been established. The teachings of Conrad and Reese et al. are clearly directed toward significantly different types of fuse arrangements. It is not clear that one of ordinary skill in the art at the time the invention was made would have considered this to be a viable combination of teachings. Specifically, it is stated in the Office Action that since the Conrad and Reese et al. references are from the same field of endeavor (electrical fuses), the purpose of the rectangular body disclosed by Reese et al. would be recognized in the invention of Conrad. Applicants point out, however, that Conrad relates to a cut-out for a primary line having a potential of 1000 to 15,000 volts and configured to be mounted on a transformer pole, while Reese et al. relates to a surface mount device having microscopic dimensions, current carrying capabilities ranging from 1/16 of an ampere to 1½ amperes, and configured for soldering onto a circuit board. Therefore, Applicants further submit that such a wide disparity in the operating conditions of the Conrad and Reese et al. devices, structural considerations for the Reese et al. device would not necessarily be relevant for a device similar to Conrad's.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 5, 11 and 14 be withdrawn.

With respect to newly added Claim 21, Applicants respectfully submit that none of the cited art describes a fuse having end caps for surface mounting of the fuse. Therefore, Applicants submit that Claim 21 is patentable over the cited art.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Bruce T. Atkins
Registration No. 43,476
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070